Solutions for Demanding Applications

**VARTECH**
**SYSTEMS INC.**

Industrial CRT and Flat Panel Displays

# *VT213 High Bright Series*

## VT213CHB · VT213PHB · VT213PSSHB
## VT213WHB · VT213YHB

# User's Guide

Read these instructions completely before attempting to operate your new Color Display.

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Section

# 1

# INTRODUCTION

## 1.1 VT213 High Bright Series

The VT213 CrystalVue High Bright (HB) series of LCD displays supplies a superior display consisting of a native resolution of UXGA (1600x1200) and 750 nits of brightness.

The VT213 CrystalVue High Bright series is capable of displaying video resolutions of VGA (640x480), SVGA (800x600), XGA (1024x768), SXGA (1280x1024) and UXGA (1600x1200) .

## 1.2 Product Safety Precautions

- ⇒ Ensure that sufficient space is available around the display to provide the circulation necessary for cooling.
- ⇒ Ensure that the ambient air temperature will not exceed the specified maximum temperature.
- ⇒ Do not attempt to service this display yourself. The rear chassis has a seal so that non qualified personal will not expose themselves to dangerous voltages or other risks.
- ⇒ To protect from electrical shock, unplug the display power supply from the wall before moving.
- ⇒ Do not expose the display to direct sunlight or heat.
- ⇒ Do not use this display near water
- ⇒ Do not place any heavy objects on the power cords. Damage may cause electrical shock.
- ⇒ Unplug the power supply from the wall or unit if one of the following conditions exists.
    - ⇒ Power cord or plug is damaged or frayed
    - ⇒ Liquid is spilled into the display or the display is exposed to rain or water.
    - ⇒ The display does not operate normally when the operating instructions are followed.
    - ⇒ The display has been dropped or the enclosure has been damaged.
    - ⇒ The display exhibits a distinct change in performance, indicating a need for service.

Section

# 2

# DISPLAY SETUP

## 2.1 VT213xHB Series Display Features

⇒ Capable of displaying unlimited colors in a continuous spectrum. The high contrast LCD enhances the image with no geometric distortion.

⇒ The VT213 CrystalVue High Bright Series directly accepts an analog 5 wire RGB with separate H/V sync or 4 wire RGB with separate combined sync or 3 wire SOG.

⇒ The VT213 CrystalVue High Bright Series is auto synchronous adjusting the display to the appropriate input between VGA, SVGA,XGA, and SXGA.

⇒ The VT213 CrystalVue High Bright Series is available in Panel Mount, Rack Mount, or Wall Mount industrial packages.

⇒ The VT213 CrystalVue High Bright Series is supplied with a Anti-Reflective Screen unless equipped with an optional Touch System.

⇒ The VT213 CrystalVue High Bright Series has an integrated 115/220VAC supply as standard on all models.

## 2.2 Unpacking and setting up your display

Your LCD monitor package will consist of the components listed below. Open shipping container and lay all components on a flat clean surface.

## 2.3 What is included with your display

- ⇒ VT213CHB, VT213PHB, VT213PSSHB, VT213WHB or VT213YHB LCD Monitor
- ⇒ 5 ft Video Cable
- ⇒ 10-32 Mounting Hardware. (For use with Panel Mount only)
- ⇒ 6 ft RS232 Touch Interface Cable (Optional when touch is installed)
- ⇒ CD ROM with Touch Screen Drivers (Optional when touch is installed)
- ⇒ Users Guide (Printed or on CD)

## 2.4 Connecting the Display

1. Connect all cables to the computer first. This would include the VGA cable and the optional RS 232 serial touch screen connection.
2. After connecting the cables between the LCD monitor and the computer, plug the customer supplied +12VDC source to the 12V connection on the rear.
3. Once the +12V connection is made, the display is active.
4. If your computer was off, turn on your computer.
5. Your display should now operate as a normal computer display showing your windows or whatever video is being sent to the flat panel.

**Note:** If for any reason the display goes blank and gives an “out of Range” or “No Input Signal”, your computer or video source is putting out a signal that is out of range of the LCD’s video board. If this happens, reboot the computer or video source and make sure you are inputting the correct signal. If the display doesn’t work properly, it may be because:

(a) The resolution is to high or low for the LCD.
(b) The refresh rate is set to high. Refresh on an LCD is different than a CRT. Set the refresh to 60Hz. CRT’s need a high refresh rate to avoid flicker. The refresh rate has no impact on LCD’s.
(c) The power source is incorrect.
(d) The unit is malfunctioning. If you believe this to be true, disconnect the video cable from the rear of the LCD and connect to a known good computer CRT display. If the computer display is working satisfactory and the video is within the appropriate range, then contact Vartech Customer service for a RMA number at 800-223-8050.

## 2.5 Signal Connections

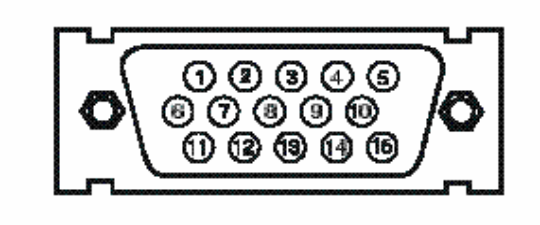
To avoid irregular operation and /or damage to the display, please insure correct video is being supplied as shown on the following page.

## 2.5 Signal Connections Cont.

You can use an HD-15 connector cable or a BNC adapter cable to connect the flat panel monitor to the host computer. The HD-15 video cable (supplied in the kit) you use with this monitor is equipped with a conventional HD-15 connector at each end.

**Note:**
The following figure is the view looking into the pin end of the male connector or solder term end of the female connector.

| **Pin assignments for the HD15 video connector.** | |
|---|---|
| **Pin** | |
| 1 | Red Video |
| 2 | Green Video |
| 3 | Blue Video |
| 4 | Not Used |
| 5 | Return |
| 6 | Red Video Ground |
| 7 | Green Video Ground |
| 8 | Blue Video Ground |
| 9 | No Connection |
| 10 | Sync Ground |
| 11 | Not Used |
| 12 | Bi-Directional Data |
| 13 | Horizontal Sync |
| 14 | Vertical Sync |
| 15 | Data Clock (SCL) |




**Standard Resolution Supported**
⇒ 640 x 480 (VGA)

Composite Video Input Connector: CVBS 1.0V p-p
S-Video: S-VHS
LUMA Signal Input 0.7V p-p
CHROMA Signal Input 0.7V p-p

## 2.5 Signal Connections Cont.

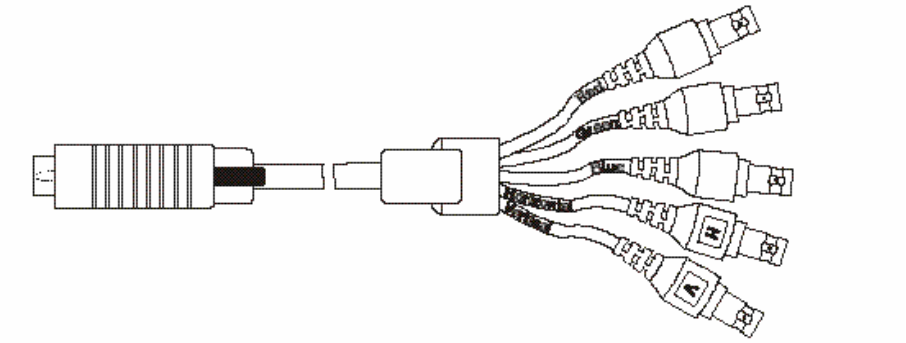
### Optional BNC Adaptor Cable

A 5BNC-to-HD15 adapter cable is available. The functions of the cables are described below.

⇒ **R**, **B**, and **G**: Red, Green, and Blue input connectors to establish color. These are used for RS-343 analog signals.

⇒ **HS/CS**: Separate horizontal/composite sync signal from the video source.

⇒ **VS**: Separate vertical sync signal from the video source.



**BNC Adapter Cable**

This table describes the signal types you can use with the connectors:

| BNC Signal Types | | | | | | |
|---|---|---|---|---|---|---|
| **BNC Signal Type** | **Description** | **R** | **G** | **B** | **HS/ CS** | **VS** |
| Sync-on-Green | Use the three video connectors. Horizontal and vertical syncs are supplied on the green video line. | X | X | X | | |
| Composite Sync | Use the three video connectors plus the horizontal sync/ composite sync input | X | X | X | X | |
| Separate Horizontal and Vertical Sync. | Use the three video connectors plus the horizontal sync/ composite sync and vertical sync input. | X | X | X | X | X |

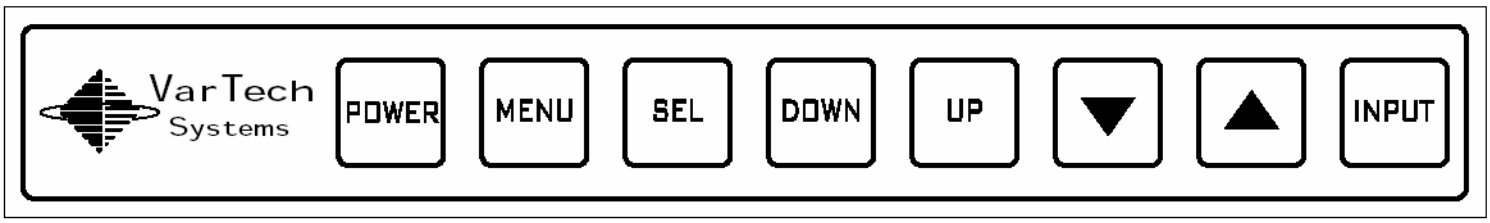
Section

# 3

# GETTING STARTED

## 3.1 Adjusting the display

The VT213xHB Series display has an embedded microprocessor in the converter card. Once you have the unit displaying the resolution you desire for your application do the following: In order to navigate to the appropriate adjustments, press **Menu** and the OSD layout chart will appear as indicated as shown below.




## 3.2 Definition of OSD (on screen display) Adjustments

There are seven membrane buttons (as shown above) located on the unit. They will activate the OSD and allow navigation to all adjustments if your unit requires adjustment.

Press MENU and a major adjustment category will appear. Press **DOWN** or **UP** and you will see the remaining adjustment categories. The actual adjustment categories are listed under each major category (**bold**) as shown below.

**ADJUSTMENT**
Brightness, Contrast, Clock, Phase, H Position, V Position, Auto

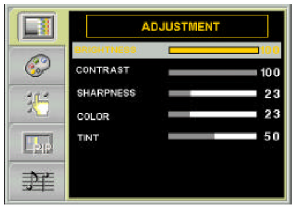
**COLOR ADJUSTMENT**
User, 6500, 9300

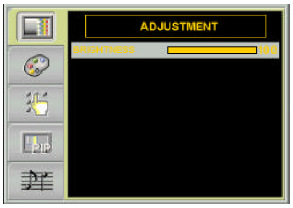
**SETUP**
Language, Image Size, OSD H Position, OSD V Position, Transparency, Zoom

**PIP - Picture in Picture**
PIP On / Off, PIP Source, PIP Size, PIP H Position, PIP V Position, PIP Image

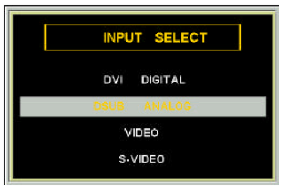
## 3.3 Adjustment Procedure

| To adjust the brightness and contrast of the screen | | |
|---|---|---|
| **OSD Agent** | | **Description** |
| | **Brightness** | Adjusts the brightness of video without affecting PC RGB's brightness |
| | **Contrast** | Adjusts the contrast of video without affecting PC RGB's contrast |
| | **Clock** | Removes the noises. When frequency value is wrong, the image has horizontal lines especially in 1 dot on and off. |
| | **Phase** | Removes the noises. When phase value is wrong, the image has vertical lines especially in 1 dot on and off. |
| | **H Position** | Adjusts the horizontal position of the image. |
| | **V Position** | Adjusts the vertical position of the image. |
| | **Auto Adjust** | "Auto adjustment" allows the monitor to self-adjust to the incoming video signal. The values of phase, frequency and position are adjusted automatically. |

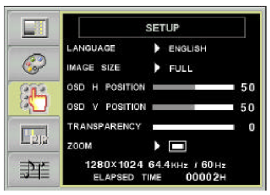
| This function is active if you select an input source other than PC. (DVD, VCR, TV) | | |
|---|---|---|
| **OSD Agent** | | **Description** |
|  | **Brightness** | Adjusts the brightness of video or TV without affecting PC RGB's brightness. |
| | **Contrast** | Adjusts the contrast of video or TV without affecting PC RGB's contrast. |
| | **Color** | Changes the richness of color. |
| | **Tint** | Changes the tone of color. |
| | **Sharpness** | Adjusts the sharpness of video or TV image. |

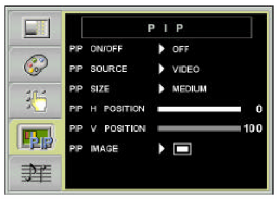
| This function is active if you select a digital DVI input source. | | |
|---|---|---|
| **OSD Agent** | | **Description** |
|  | **Brightness** | Adjusts the brightness of video or TV without affecting PC RGB's Brightness. |

## 3.3 Adjustment Procedure

| Selects the applied input among DVI digital, Analog RGB, Video and S-VHS | | |
|---|---|---|
| **OSD Agent** | | **Description** |
|  | **DVI Digital** | Selects the DVI Digital function. |
| | **Analog RGB** | Selects the Analog RGB function. |
| | **Video** | Selects the Video function. |
| | **S-VHS** | Selects the S-VHS function. |

| To adjust the tone of color from redish white to bluish white.<br>The individual color components are also user customizable. | | |
|---|---|---|
| **OSD Agent** | | **Description** |
| | **6500º K** | Redish white |
| | **9300º K** | Bluish White |
| | **User** | User Customizable |

| To adjust OSD menu information | | |
|---|---|---|
| **OSD Agent** | | **Description** |
|  | **Language** | English, German, French, Italian, Spanish |
| | **Image Size** | Changes the image size in several different ways |
| | **OSD H pos** | Moves the OSD Window to the horizontal direction. |
| | **OSD V pos** | Moves the OSD Window to the vertical direction. |
| | **Transparency** | Changes the opaqueness of the background of the OSD |
| | **Zoom** | Closes up or down the main display |
| | **Information** | Displays current display mode.<br>Displays the driver board operating duration. |

| PIP - Picture in Picture | | DVI Digital and DSUB ANALOG only |
|---|---|---|
| **OSD Agent** | | **Description** |
|  | **ON / OFF** | Selects PIP enable or disable |
| | **Source** | Selects PIP source (S-VHS, Video) |
| | **Size** | Adjusts PIP screen size (Small, Medium, Large) |
| | **H Position** | Adjusts the horizontal position of PIP screen |
| | **V Position** | Adjusts the vertical position of PIP screen |
| | **Image** | Adjusts brightness, contrast, sharpness, color, tint of PIP screen |

Section

# 4

# DISPLAY TIMING

**Applicable Video Timing**

The following table lists the better display quality modes that these LCD monitors provide. If the other video modes are input, the monitor will stop working or display unsatisfactory picture quality.

| VESA MODES | | | |
|---|---|---|---|
| | | Horizontal | Vertical |
| Mode | Resolution | Nominal Frequency KHz | Nominal Frequency KHz |
| VGA | 640 x 480 | 31.5 | 60.0 |
| | | 37.5 | 75.0 |
| | | 37.8 | 72.8 |
| | 720 x400 | 31.5 | 70.1 |
| SVGA | 800 X 600 | 35.2 | 56.3 |
| | | 37.9 | 60.3 |
| | | 46.9 | 75.0 |
| | | 48.1 | 72.0 |
| XGA | 1024 x 768 | 48.4 | 60.0 |
| | | 56.5 | 70.1 |
| | | 60.0 | 75.0 |
| SXGA | 1280 x 1024 | 63.98 | 60.02 |
| | | 79.98 | 75.03 |
| UXGA | 1600x1200 | 75.0 | 60.0 |
| **MS-DOS MODES** | | | |
| DOS | 640 x 350 | 31.5 | 70.1 |
| **MAC MODES** | | | |
| VGA | 640 x 480 | 35.0 | 66.7 |
| SVGA | 832 x 624 | 49.7 | 74.6 |

Section

# 5

# TOUCH SCREEN

## 5.1 Introduction

Touch screens are a common means to interface operator inputs to a system. The universal standard of Windows GUI (Graphical User Interface) has significantly increased the use of touch screens.

There are four main touch technologies. The technologies are resistive, surface acoustic wave (SAW), capacitive, and infrared (IR). Each touch technology has advantages and disadvantages based on different user applications.

## 5.2 Installation

All Vartech Systems displays configured with a touch screen are supplied with a CDROM which includes user manuals, application software, and drivers for various operating systems. Insert the supplied CDROM into a CDROM drive and follow the installation instructions that will appear on the screen.

Limited technical support is available by contacting Vartech Systems customer support at 800-223-8050.

Section

# 6

# TROUBLESHOOTING

| Troubleshooting | |
|---|---|
| **Trouble** | **Troubleshooting Tip** |
| No Picture | ⇒ The signal cable should be properly connected to the display card and computer.<br>⇒ Try disconnecting the video cable from the display and connecting to a CRT display if available to confirm the presence of proper video.<br>⇒ Make sure power is connected to the proper DC or AC source.<br>⇒ Make sure the resolution mode is supported by the display and check settings of the display card.<br>⇒ Confirm that the video cable is not defective. |
| Image Persistence | Image persistence occurs when a ghost of an image remains on the screen after the monitor has been turned off. Unlike a CRT monitor, an LCD monitor's image persistence is not permanent. To erase an image ghost, turn the monitor off for as long as the image was displayed. If the image was on for one hour and the ghost of the image remains, the display should be turned off for one hour to erase the image. To avoid this problem, use a screen saver. |
| Picture Quality & Image Stability | ⇒ Check for proper video cable for proper grounding and shielding.<br>⇒ Check the signal source for proper signal.<br>⇒ Check for proper adjustment of the Phase and Frequency controls.<br>⇒ Check for proper recommended signal timing. |
| Green LED not lit | Check for proper power and power connections |
| Green LED blinking | This indicates absence of video or proper video for this display |
| Display image is not properly sized | ⇒ Adjust the Vertical and Horizontal size controls via the OSD. (Reference setup adjustments)<br>⇒ Ensure that a supported mode is selected on the display card or system being used. Consult the display card or system manual for proper video. |
| No S-Video or NTSC operation | ⇒ Check for proper connections.<br>⇒ Check the setup instructions for proper input selection. |
| If these tips do not solve your problem, contact Vartech Systems Customer Service support. | |

## Troubleshooting Cont.

| Trouble | Troubleshooting Tip |
|---|---|
| Screen is blank. | Screen saver activated.<br>Video Cable problem. Check for proper installation<br>Change video cable .<br>Faulty video display. Needs Service. |
| Image is dim, even with brightness and contrast controls set full UP | Video cable problem. Check for proper installation of cables<br>Faulty video source.<br>Faulty display. |
| Image not centered | Reset the horizontal and vertical positioning using the on-screen menu. Check to see if video source is operating within the monitor's range |
| Image will not adjust | Video timing outside of range. Use the on-screen menu to ad just the Clock Setting.<br>Make sure timing is within VESA standard. |
| Image is not stable. | Monitor has incorrect or bad sync signals.<br>Check for proper video cable installation.<br>Replace suspected faulty cable.<br>Check to ensure that video source is operating within the display's range. |
| Vertical shaded bars on Screen image | Horizontal size not properly adjusted.<br>Adjust horizontal size settings |
| Colors are missing | Faulty video cable.<br>Missing from video source.<br>Connect video source to another display |
| Screen jitter or noisy display | Monitor clock phase not properly adjusted |
| Slight distortion in text or Graphics. | Not working in native resolution. |
| Display is present but "bars" Appear or roll across screen | Ground loop problem between computer and display<br>Interference from adjacent equipment |
| The background looks Acceptable but text and Icons seem to be missing rows of pixels | Video running interlace mode. |

Section

# 7

# CLEANING AND MAINTANENCE

**Cleaning**
Occasionally clean the display panel and cabinet with a soft cloth dampened (not soaked) with a mild (non-abrasive) glass cleaner. Keep turning a fresh side of the cloth toward the screen surface to avoid scratching it with accumulated grit.

**Note:**
The solvent should be applied only to the cloth, and not directly on the monitor screen.

Do not use paper products as they may scratch the surface. To minimize the risk of abrasion, allow the screen to stand dry.
Special care should be taken when cleaning a touch screen or polycarbonate shield that is installed over the screen. Abrasive and certain chemical cleaners can easily damage the surface.
**Never** use alcoholic or ammoniac cleaners to clean the polycarbonate shield or a touch screen.

**Note:**
For best results cleaning a monitor with the optional antireflective tempered glass display shield, a solution of denatured alcohol is recommended to thoroughly clean the display.

**Replacing a Line Cord**
To avoid shock and fire hazards, the monitor's power cord should be replaced if the insulation becomes broken or if it develops a loose internal connection.

**Other Maintenance**
Qualified service personnel should perform all maintenance, except for the power cord replacement described above.

Section

# 8

# SPECIFICATIONS

| ENGINEERING SPECIFICATIONS | |
|---|---|
| Panel Size | 21.3” |
| Type | TFT Active Matrix |
| Resolution Capabilities | VGA to UXGA |
| Pixel Pitch | 0.270mm |
| Active Display Area | 17.007" (w) x 12.756" (h)<br>432.00mm x 324.00mm |
| Pixel Format | 640 x 480, 800 x 600, 1024 x 768, 1280 x 1024, 1600 x 1200 |
| Viewing Angle (Left/Right) | 85/85º |
| Viewing Angle (Up/Down) | 85/85º |
| Contrast Ratio | 800:1 typical |
| Brightness | 750 nits typical |
| Response Time | rise 15ms typical<br>fall 10ms typical |
| Back Lights | 30,000 Hrs. Half Life |
| Input Connector | HD15(F), DVI-D, RCA (NTSC/PAL), 5 Pin Mini Din S-Video |
| Colors Supported | 16.8M (true 8-bit data) |
| Video Input | 0.7Vp-p / 75 ohm, Digital |
| Sync | Separate H&V, Combined,<br>SOG (Sync On Green), Digital |
| Input Voltage | AC 100-240V 50/60Hz 1.0A |
| Power consumption | Normal: 72Watts @115VAC Sleep Mode: 10Watts |
| Operating Temperature | 0 to 50ºC |
| Storage Temperature | -20 to 60ºC |
| Operating Humidity | 8 to 95%NC |
| Storage Humidity | 8 to 95%NC |
| Operating Altitude | Up to 10,000 ft |
| Storage Altitude | Up to 30,000 ft |
| *Outdoor Brightness Equivalent (Varies depending upon sunlight brightness) | |

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